

**REMARKS**

Claim 27 has been canceled. Claims 1-26 and 28-36 are active in the case. Claims 5-7 and 12-22 stand withdrawn from consideration. Reconsideration is respectfully requested.

Applicants' representative wishes to thank Examiner Choi for the helpful and courteous discussion of February 9, 2004.

The present invention relates to a magnesium carrier for olefin polymerization catalysts.

**Claim Amendments**

Claims 1, 4, 8, 11, 25, 26 and 29 have been amended to recite that the magnesium alkoxide compound product of the invention consists essentially of a magnesium dialkoxide compound. Thus, the scope of the indicated claims has been narrowed by more precisely limiting the alkoxide compound to magnesium dialkoxide. Moreover, Claims 1, 25 and 26 have been narrowed in scope by reciting the range of gram atom content of halogen in the magnesium dialkoxide product to 0.0001 to 0.06. Support for the upper limit of the range can be found, for instance, in Claim 27, now canceled. Claims 8 and 29 have been similarly limited with respect to the upper limit of halogen content. None of the amendments that have been made raise new issues and none raise an issue of new matter. Entry of the amendments into the record is respectfully requested.

### Invention

The present invention as claimed in one aspect is directed to a magnesium compound that consists essentially of a magnesium dialkoxide prepared by reacting metallic magnesium, an alcohol and 0.0001 to 0.06 gram atoms, in terms of halogen atoms relative to one gram atom of magnesium, of a halogen and/or a halogen-containing metal compound, at 30° to 60° C. The method of preparing the magnesium dialkoxide product is also an aspect of the invention.

Other aspects of the invention specify that the sphericity of the magnesium compound particles is less than 2.0, the mean particle size ranges from 38 to 60  $\mu\text{m}$ , the particle size distribution of the magnesium compound particles is less than 4.0 and ratio of halogen or the halogen of a halogen containing compound to one gram atom of magnesium ranges from 0.0001 to 0.06.

### Prior Art Rejection

Claims 4, 11 and 36 stand rejected based on 35 USC 102(b) or 35 USC 103(a) as anticipated by or rendered obvious over Murata et al, U. S. Patent 4,960,743. This ground of rejection is respectfully requested.

Claims 1-3, 8-10 and 23-35 stand rejected based on 35 USC 103(a) as obvious over Murata et al, U. S. Patent 4,960,743. This ground of rejection is respectfully requested.

The Examiner refers to Examples 11 and 12 as probative to the issue of patentability of the invention. However, these examples must be understood in terms of the process of

Example 1 of the patent, since this example is basic to the specified two examples. In Example 1, a magnesium alkoxide product is formed. However, magnesium metal is converted to an alkoxide by reaction, not with an alcohol as required by the present claims to form magnesium dialkoxide, but with ethyl orthoformate, which is an ester. The reaction is also conducted in the presence of a substantial quantity (0.8 mol) of halogen containing compound, i.e., butyl chloride, which also reacts with magnesium such that the product formed is a mixed magnesium halide alkoxide compound. As disclosed at column 7, lines 38-39, the magnesium product contains 22.5 % Mg and 34.0 % chlorine which means that the atomic ratio of halogen to magnesium in the mixed alkoxide product is essentially 1:1. Thus, the stoichiometry of the product is essentially:  $\text{MgCl}(\text{ethoxide})$ . Thereafter, this haloalkoxide compound is contacted and reacted with trichloroethanol which means, in view of the magnesium and halogen content data of column 7, lines 67-68, that the magnesium carrier 14.w % Mg and 47.5 % chlorine. This reaction sequence at no stage results in a magnesium compound that is essentially magnesium dialkoxide.

In the case of Example 11, the procedure of Example 1 was followed except that the haloalcohol that was used was p-chlorophenol. The content of Mg in the alkoxide product is 19.6 wt % and the content of chlorine is 24.0 wt % as shown in the table of columns 9 and 10. This means that the atomic ratio of halogen to magnesium in the mixed alkoxide product is 0.66: 0.82 which, in effect, is a ratio of about 1:1.2. Accordingly, the amount of halogen in the alkoxide product is a little less than a 1:1 ratio so that the product  $\text{MgCl}(\text{ethoxide})$  compound has a proximate stoichiometry of  $\text{MgCl}_{0.8}(\text{ethoxide})_{1.2}$ . In the case of Example 12

where the halogen containing alcohol employed was 1-bromo-2-ethanol, the content of Mg in the alkoxide product is 19.4 wt % and the content of chlorine is 43.1 wt %. This means that the atomic ratio of halogen to magnesium in the mixed alkoxide product is 1.21: 0.81 which, in effect, is a ratio of about 1.5:1. Thus, the proximate stoichiometry of the alkoxide compound is  $\text{MgCl}_{1.5}(\text{ethoxide})_{0.5}$ . The important conclusion from the data provided for Examples 11 and 12 of the reference is that these alkoxides are relatively high halogen content magnesium alkoxides and certainly are not magnesium dialkoxides, which may contain a relatively small amount of halogen as is evident by the limitation in Claims 1, 25 and 26 which place an upper limit on the ratio of halogen atoms to magnesium atoms of 0.06 gram atoms! In fact the permissible halogen content of the present magnesium dialkoxide of 0.6 to 2 wt % means that the halogen is an impurity in the form of  $\text{Mg}(\text{hal})(\text{ethoxide})$  that adheres to the surface of crystals of  $\text{Mg}(\text{ethoxide})_2$ . A comparison of data of characteristics of the examples of Murata et al with the same characteristics of the magnesium dialkoxide of the present invention is as follows:

	Murata et al	Invention
Halogen Content (wt %)	24.0 - 67.7	0.6 - 2
Specific Surface Area ( $\text{m}^2/\text{g}$ )	68 - 162	5
Pore Volume ( $\text{ml/g}$ )	0.90 - 0.21	0.01
Ave particle diameter ( $\mu\text{m}$ )	7 - 29	38 - 60
Particle size distribution Index (P)	2.0 - 3.4	3.4 - 3.8

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Clearly, in view of comments above, the present invention is neither anticipated nor obviated by the cited and applied Murata et al patent. Withdrawal of the stated grounds of rejection is respectfully requested.

It is believed that the application is in proper condition for allowance. Early notice to this effect earnestly solicited.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "F.O. Oblon", written in a cursive style.

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